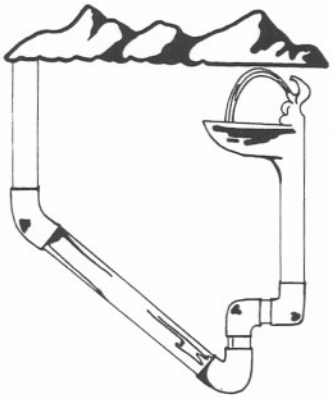
Water Lines



Water Lines is the resource newsletter and calendar of the Nevada Drinking Water and Wastewater Training Coalition.

Volume 15 Winter 2004 - 05 issue

Inside this issue....

Special Insert
Safe Drinking Water Trust eBulletin

Rural Community Assistance Corporation funds *Water Lines* through a contract with the Nevada Division of Environmental Protection.

Editor, Abigail Johnson

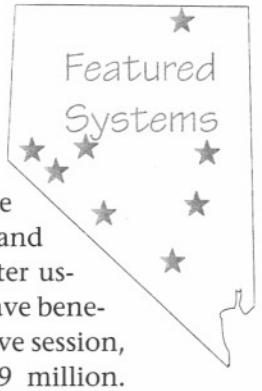
Editor and Production, Kristin Middaugh, RCAC

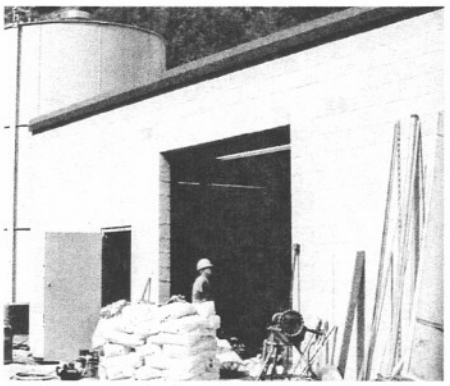
Featured Systems:

State "AB 198" grant program success stories

By Bob Foerster, Nevada Rural Water Association

Since 1991, the Nevada Legislature has funded a grant program for water system infrastructure. The program is referred to by the originating legislation, *AB 198*. Over the years, approved funding has amounted to $90 million through the sale of state general obligation bonds, and both urban and rural water users throughout Nevada have benefited. In the 2003 legislative session, *AB 198* funding was $19 million.





Jarbidge CT tank and treatment building

Legislation passed in the last session, *SB 200*, provided $4 million for septic-to-sewer conversion in the Spanish Springs area of Washoe County. Also assisted was a smaller project in Douglas County. In 1999, *SB 237* added $10 million for water conservation and to assist areas where the state engineer deemed the water table depleted.

These programs have provided tremendous benefits to our communities. Now, all of these funds have been awarded or are obligated to systems with active letters of intent.

Hopefully, one outcome of the upcoming legislative session will be continued — or even additional — funding. To get an idea of how the program works for Nevada communities, consider these AB 198 success stories:

- In **Clark County**, the **Kyle Canyon** water system was awarded a grant in 2002. The project renovated distribution lines and constructed a new water supply well. AB 198 contributed $811,156, constituting 61.9 percent of the project costs.
- The drinking water source in **Jarbidge**, **Elko County**, is a mountain stream. Without treatment other than chlori-

(Continued on page 2)

NTC board announces election results

By Abby Johnson, Rural Community Assistance Corporation

The Nevada Water and Wastewater Training Coalition (NTC) met on Oct. 1, 2004 to elect two new board members. The meeting was the first time that NTC used videoconference capabilities. Participants from the Reno, Carson City, Elko and Las Vegas sites were able to vote and participate.

The election results are final. Incumbents Mark Walker and Cameron McKay were elected to two year terms. The remaining seats, currently held by Bob Foerster, Dean Adams and Kirk Peterson, will be open for the next general meeting, held in conjunction with the Nevada Rural Water Association technical conference in March 2005.

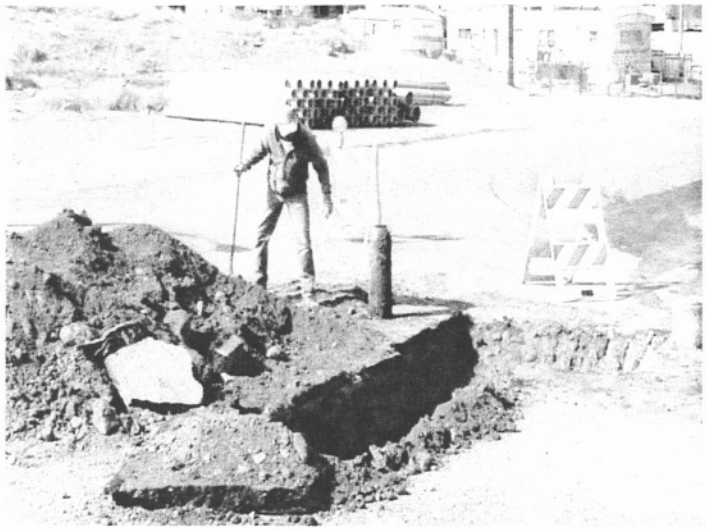
Congratulations to the elected board members.

Featured Systems

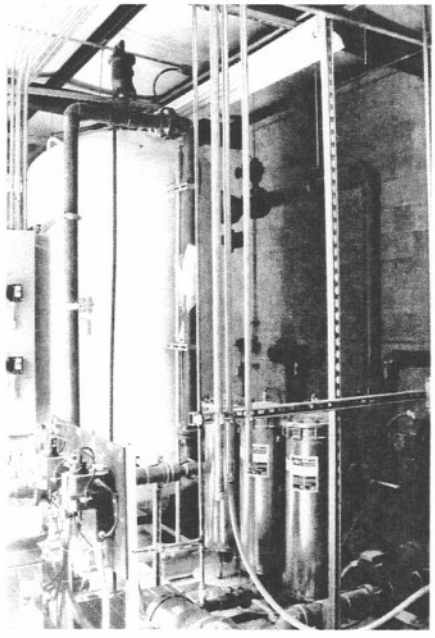
(Continued from page 1)

nation, a "boil water" condition had existed since the 1980s. Now, with an AB 198 grant funding 85 percent of the $1.3 million project, the system has been renovated and improved. There are new distribution pipelines, water meters, fire hydrants, additional storage and a drinking water filtration system. The Jarbidge project is representative of coordination among infrastructure funding agencies. CDBG funds provided the preliminary engineering, and AB 198 and USDA-Rural Utilities Services funded the remainder of the project.

- The **Mason** water system in **Lyon County** was in poor condition, with high costs for leak repairs and water losses. When leak repairs were needed, nearby customers were often without water for hours. The distribution system was renovated, a new storage facility built, and interconnection with the Yerington system accomplished. Now, there is a reliable water supply. The AB 198 portion (85 percent of project cost) was $3.989 million.
- **Moundhouse**, also in **Lyon County**, had an aged water system that was inadequate for meeting the needs of the area. Moundhouse is a growing business center west of Dayton. Low pressure situations were common. Some water lines needed to be relocated. Now, with $2.938 million from AB 198, (85 percent of the project funding) water service in Moundhouse will be able to meet expected standards.
- The vintage water system operated by **Tonopah** Town Water in **Nye County** had reached the end of its life cycle in many aspects. Now, lines have been replaced and relocated (some were beneath houses), tanks replaced and new disinfection equipment installed. AB 198 funds constitute 72.1 percent of the project costs, up to $3.232 million. The system now operates more efficiently and will be reliable for decades to come.



Water line work in Tonopah



Roughing and cartridge filters in Jarbidge

- The water system operators in the **City of Caliente** in **Lincoln County** recognized a need to replace aged distribution lines, increase storage capacity, and deal with arsenic contamination. A new well in a low arsenic aquifer will meet that need. Other infrastructure improvements provide better water pressure and reliability. Without the $1.177 million infusion from AB 198, Caliente might not have been able to meet these needs.
- **Montello**, in **Elko County**, had deteriorated spring water collection and distribution systems, resulting in poor water quality and high repair costs. Montello was able to consolidate several springs into a renovated spring collection system and now has new transmission lines. There are new distribution lines in town, along with new fire hydrants and system valves. The renovated system is expected to last for decades with normal operation and maintenance costs. AB 198 funded $1.125 million dollars, amounting to 81.4 percent of the project costs.
- **Kingsbury** General Improvement District in **Douglas County** had an aging distribution system with some lines outside traditional easement corridors. The system was experiencing leakage and high repair costs. Renovation of the system has been scheduled in manageable stages. AB 198 program funds will cover 61.9 percent of project costs, up to $5.1 million.

(Continued on page 3)

The Spigot Q & A

Q.1. What type of oxidizing chemical can be used for disinfection?

a. Chlorine dioxide
b. Ozone
c. Iodine
d. All of the above

Q.2. Chlorine gas is...

a. Denser than air.
b. Lighter than air.
c. Lighter than air only when under pressure.
d. The same weight by volume as air.

Q.3. Calcium hypochlorite is formulated as a...

a. Coagulant.
b. Gas.
c. Liquid.
d. Powder.

Q.4. Chlorine leaks in metal containers tend to...

a. Become larger.
b. Become smaller.
c. Remain the same size.
d. Seal themselves.

Q.5. A chlorine cylinder valve is thought to be leaking. If ammonia vapor is passed near the valve, the presence of a leak would be indicated by...

a. A loud noise.
b. Red vapor.
c. A rotten egg odor.
d. White smoke.

Developed by: Skeet Arasmith, Linn-Benton College, Oregon.

Crystel Montecinos, Program Development Specialist with the UNR Cooperative Extension, prepares The Spigot.

ANSWERS ON PAGE 7

Featured Systems

(Continued from Page 2)

The amount of grant-funded project costs depends on local economic conditions. Water systems must obtain matching funds on their own.

Eligible systems borrow from USDA-RUS, or the State Revolving Loan Fund. The financing package sometimes includes a CDBG grant for initial costs such as preliminary engineering studies.

Local median household income determines the percentage of actual project costs granted, with a cap of 85 percent. After the project is funded, the new water rate is calculated to be at least 1.5 percent of local median household income, in order to repay the loan and fund depreciation. Without the state grant program, these systems would not have accomplished their projects and would still be dealing with high cost, low efficiency water systems.

Water tank construction in Jarbidge

AB 198 and the Future

There are two widespread contaminant threats facing Nevada systems in the near future. One is nitrate contamination, which is acutely toxic to infants under six months old.

Because septic systems do not adequately treat wastewater, high-density developments using septic tanks will eventually result in groundwater contamination.

There are numerous Nevada sites where this problem is imminent. Solutions include sewers and facilities installation for wastewater treatment and, at times, drinking water treatment or even alternative drinking water source development.

The other, equally immediate problem is the primary drinking water standard for arsenic, revised in 2001 with compliance *required* in January 2006.

Arsenic is a naturally occurring contaminant, found in all areas of our state (although not in all water sources). Some impacted systems will be able to obtain exemptions, but, exemptions only defer the compliance date by a few years. In 2001, the Bureau of Health Protection Services developed an estimate of $400 million for statewide compliance with the arsenic standard.

Nevada's consumers need quality drinking water at a reasonable cost. While there are more AB198 success stories, there are many systems still needing renovation.

By combining renovation needs with the challenges of water quality deterioration and new regulations, it is easy to see that Nevada communities will rely on a state grant program for infrastructure funding well into the future.

Special thanks to Bill Coughlin of NDEP for his assistance in preparing this article.

Microscopic examination of activated sludge

By Kirk Peterson, SPB Utilities

Anyone who has operated an activated sludge wastewater treatment facility has probably experienced problems with process control. Activated sludge bulking, foaming and other solids separation problems can be a seasonal concern, plaguing a facility during high flow periods or appearing for no apparent reason.

David Jenkins, Michael Richard and Glen Daigger recently published their third edition of a manual titled, "The Causes and Control Problems Related to Activated Sludge Bulking, Foaming and Other Solids Separation Problems." I would encourage anyone dealing with an activated sludge facility to obtain this latest edition. Many of the previously established ideas of what causes bulking and foaming are now better understood and defined.

The manual describes activated sludge solids separation problems, discusses their causes, presents a rational approach for problem diagnosis and discusses methods for preventing those problems by proper design and operation or by solving them when they occur.

To form the irregularly shaped floc often seen in healthy activated sludge, filamentous organisms are required. They provide the "backbone" for floc, somewhat analogous to leaves on a tree. Bulking is caused when there is an overabundance of filamentous organisms (branches). The organisms interfere with the settling and compaction of the activated sludge needed to allow the treatment process to produce a clarified effluent.

For example, a facility that I assisted was experiencing low dissolved oxygen values, especially during the weekend when flows and strengths would increase. The most obvious sign of low dissolved oxygen was poor settling and the heavy foam layer on the aeration basin and clarifier. Further investigation showed that the vast majority of the filamentous organisms were *microthrix parvicella*, which are prominent in low dissolved oxygen or anaerobic environments. The Third Edition manual correctly recognized the need to aerate the return sludge for a period of time before introducing any raw sewage to the flow stream.

MANY OF THE PREVIOUSLY ESTABLISHED IDEAS OF WHAT CAUSES BULKING AND FOAMING ARE NOW BETTER UNDERSTOOD AND DEFINED.

Identification of filamentous organisms can be a difficult task but new publications, such as this most recent edition, can take some of the pain out of the process. The purchase of a phase contrast microscope is necessary to begin filamentous organism identification. The use of a phase contrast microscope is

(Continued on page 5)

Winter safety tips for water operators

By Stevan Palmer, Rural Community Assistance Corporation

Winter weather in Nevada presents a variety of potential safety hazards to water treatment and distribution operators, both on and off the job. The likelihood of slips and falls increases on wet and icy surfaces and controlling of motor vehicles becomes more difficult. During winter, operators must also guard against hypothermia and frostbite.

Slips and falls are common accidents in water utilities. Floors should be free of debris and water or chemical spills should be cleaned up immediately. Nonflammable absorbent materials should be available for cleaning up liquid spills. Sawdust is combustible and should never be used as an absorbent.

Use catwalks or safety treads on floors that are often wet. Apply surface coatings, such as nonslip paint or adhesive strips, to problem floor areas. All stairways and elevated walkways should have safety railings. Caution signs can call attention to potentially hazardous conditions. Wearing footwear with appropriate soles for wet or icy surfaces also helps prevent accidents.

Winter weather increases motor vehicle hazards. Water operators must be particularly careful because they often drive large, oversized and/or specialty equipment. Such equipment typically has limited visibility, reduced braking effectiveness, less maneuverability and can be top heavy. Under wet, icy, or high wind conditions, drivers of these vehicles have much less control.

Rear end collisions, are among the most common. Wet or icy road surfaces increase the distance needed to stop a vehicle safely and give the driver less time to react. Rain and snow impair road vision.

(Continued on page 5)

Sludge

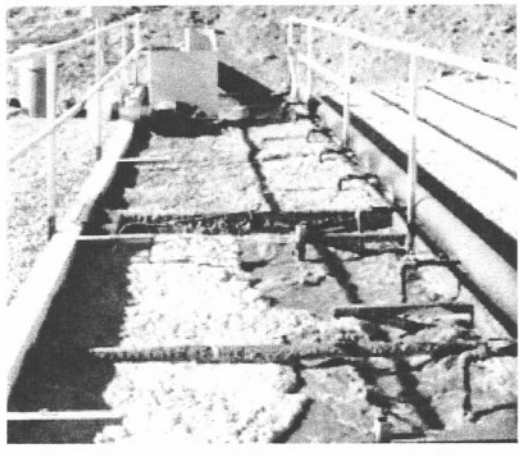
(Continued from page 4)

essential to filament identification because biological material has very low contrast when viewed directly (standard microscope). Illumination with a phase contrast microscope reveals much more detail in such low contrast material.

A modern trinocular phase contrast microscope currently costs about $5,000. To complete the necessary basic supplies, a bacteriological staining kit can be purchased for about $235.

The kit contains the most commonly used stains for filamentous organism examination. The kit includes a guidebook and will save both time and money.

There is, however, an effective alternative to purchasing both the microscope and staining kit. Many companies now will identify filamentous organisms through samples sent by mail. The use of a disposable pipette sealed at the tip with a flame can be mailed in a standard envelope.



Heavy foam accumulation on an aeration basin

In return, the sender typically receives color photos and a lengthy report of probable causes and the types of filamentous organisms identified. The charge for each sample analyzed is generally about $200.

Dr. Mike Richard recently conducted an informative workshop at Washoe County's South Truckee Meadows Water Reclamation Facility. The workshop was sponsored by the Nevada Water Environment Association and the Nevada Division of Environmental Protection through the EPA funded 104(g) Operator Training Assistance Program. Dr. Richard is a strong advocate of microscopic examination of activated sludge to identify causes of poor quality and performance. In addition, David Jenkins, Glen Daigger and Dr. Richard routinely host training sessions in different venues throughout the country. Don't miss the chance to attend one of their seminars!

Safety

(Continued from page 4)

Proper vehicle inspection is especially important during winter. Make sure windows are clean, wiper blades are working, mirrors are adjusted and all lights and turn signals operate properly.

Check tires for tread damage and proper inflation and make sure the tires have appropriate tread design for winter roads. Top off vehicle fluids, including window washer fluid. Keep the fuel tank at least half full at all times during winter. It is a good idea to keep a winter travel kit.

Frostbite and hypothermia are health issues of concern to utility workers, who are often required to spend significant amounts of time outside. Frostbite refers to the freezing of body tissue and can permanently damage its victims. A loss of feeling and a white or pale appearance in fingers, toes, nose and ear lobes are symptoms of frostbite. Hypothermia is brought on when body temperature drops to less than 90 degrees Fahrenheit. Symptoms of hypothermia include: uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness and exhaustion. If frostbite or hypothermia is suspected, warm the person slowly and **seek immediate medical assistance**. Frostbite victims should immerse the effected area in warm — not hot — water. If water is not available, use body heat.

Winter Travel Kit Essentials

- Flashlights and extra batteries
- First aid kit with pocket knife
- Necessary medications
- Blankets or sleeping bags
- High energy food
- Plastic bags (for sanitation)
- Rain gear and extra clothes
- Sack of sand for traction
- Small shovel, matches
- Small tools (pliers, wrench, screwdriver, etc.)
- Booster cables
- Tire chains or traction mats
- Bottled water

For instance, tuck hands in armpits or cover ears with dry hands. Never rub a frostbitten area as this can increase tissue damage. In cases of hypothermia, warm the victim's trunk first, and arms and legs last, because stimulation of the limbs can drive cold blood toward the heart and lead to heart failure. Put the victim in dry clothing and wrap in a blanket. A frostbite or hypothermia victim should not drink caffeinated liquids (such as coffee or tea) or alcohol; they may intensify the ill effects of cold body temperatures.

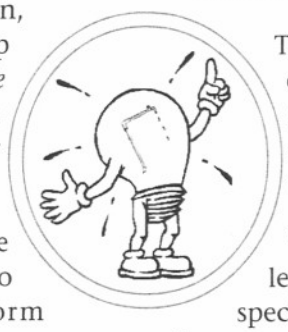
*This information is offered as an introduction **only**. Consult your system's safety policies and manuals.*

Water System Solutions

Sign up to receive free online news!

By Jean Thompson, Rural Community Assistance Corporation

Reaching out to water systems across the nation, the Rural Community Assistance Partnership (RCAP) has taken the initiative to launch the *Safe Drinking Water Trust eBulletin* (see insert), an innovative tool designed to serve as a primary resource in water system solutions.



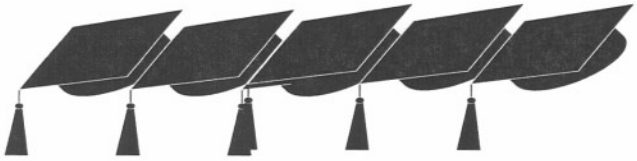
This valuable tool is offered at no cost to the water systems. To register, users simply go online and fill out the subscription form at *www.watertrust.org*.

Today's water treatment decision makers face important choices that require quick action and a clear understanding of regulatory issues. Every three weeks *SDWT eBulletin* subscribers receive an interactive e-mail bulletin containing informational articles written in plain English that are designed to put a wealth of information at their fingertips. Recognizing that water systems need more than just additional reading material, the *SDWT eBulletin* offers both up-to-date financial resources and an interactive "ask-the-expert" section providing direct access to water industry experts from across the nation.

Taking nearly two years to conceptualize and design, the inaugural issue of the *Safe Drinking Water Trust eBulletin* was unveiled this summer. RCAP staff members may be contacted at *www.rcap.org*.

This free resource is one of the industry's leading centralized water utility tools created specifically to help small public water systems keep up with the flurry of regulations that impact this industry. The project is supported through a federal Homeland Security Grant awarded by the U.S. Department of Health and Human Services.

New Nevada operators certified



These operators passed entry level water certification exams for distribution and treatment grades 1 & 2. Congratulations !

Distribution grades 1, 2,

Blair, Henry W., D-1; Blake, Darrel, D-1; Boren, James D., D-1; Butts, Thomas, D-1; Caban, Heriberto, D-1; Crawford, Doug, D-1; Damele Jr., Ronald D., D-1; Johnson, Donald, D-1; Kaluza, Kim A., D-1; Kreutler, Joshua D., D-1; Littlefield, Kody L., D-1; Marquez, Joseph B., D-1; McKay, Patrick S., D-1; Nadelson, Louis, D-1; O'Dell, James, D-1; Palmer, John V., D-1; Payne, Troy, D-1; Quigley, Patrick, D-1; Timko, Steve T., D-1; Van Doren, Scott, D-1; Wooters, Dale E., D-1; Wurth, Thomas A. D-1; Bunkowski, Travis, D-2; DeVaney, John, D-2; James, David F., D-2; Orme, Phillip, D-2; Robb, Paul, D-2; Sautter, Eric R., D-2

Treatment grades 1 & 2

Arenas, Ruben, T-1; Healy, Johanna R., T-1; Howell, John D., T-1; Johnson, David L., T-1; Johnson, William Henry, T-1; Kreiser, Chad, T-1; Moore, Cindy, T-1; Newman, Bryan O., T-1; Park, Daniel S., T-1; Van Doren, Scott, T-1; Dobyns, Dennis E., T-2; Fonger, Evan G., T-2; Moyle, Craig, T-2; Nevarez, Michael J., T-2; Turner, Ted, T-2.

Resource Round-up

NvRWA Conference: Training Scholarships Offered

A Nevada Rural Water Association (NvRWA) scholarship, funded by a grant from the Nevada Division of Environmental Protection, is expected to be available for the 2005 Annual Conference.

The NvRWA Annual Conference will be held from March 22 though 24, 2005 at the Silver Legacy in Reno. The conference water certification test will take place on March 25.

Ten scholarships will be available to reimburse training costs for travel, meals, lodging and conference tuition. The scholarships are competitive and awarded based on need. Small system operators are encouraged to apply, especially first-time conference attendees.

Scholarship applications will be published and also made available on the NvRWA web site after the first of the year. For further details or an application call NvRWA at 775/783-7225.

Training Calendar 2005

2005

January 7 —Reno and video conference locations TBA— Nevada Training Coalition Board Meeting. Info: Bob Foerster 775-783-7225.

January 11—Carson City—RCAC Budget Development and Rate Setting. Info: Stevan Palmer, 775/323-8882.

January 13—Beatty—NvRWA Arsenic-Update and Treatment Technologies. 8 a.m. – 10 a.m.; Radon and Radionuclides. 10 a.m. – Noon.**

January 19-21—Tonopah—Rural Planning and Natural Resources Conference, sponsored by Nevada Division of State and Lands. Info: Clint Wertz, 775/687-4364 ext. 236 or cwertz@lands.nv.gov.

January 27—Fernley—NvRWA Treatment Class. 9 a.m. – Noon.**

February 1-3—Reno—Nevada Water Resources Association Annual Conference: Growth, Water and the Quality of Life in Nevada. Info: 775/626-6389.

February 8—Fernley—NvRWA Treatment Class. 9a.m. – Noon.**

February 10—Gardnerville Ranchos—NvRWA Arsenic-Update and Treatment Technologies. 8 a.m. – 10 a.m.; Radon and Radionuclides. 10 a.m. – Noon.**

February 22—Fernley—NvRWA Treatment Class. 9 a.m. – Noon.**

February 23-24—Las Vegas—RCAC Water Distribution and Treatment Operator Certification Test Preparation Grades I and II. Info: Stevan Palmer, 775/323-8882.

March 22-25—Reno—NvRWA Annual Conference, Silver Legacy. Info: 775/783-7225.

March 23-25—Las Vegas—Nevada Water Environment Association annual conference, Tuscany Hotel and Casino. *Info: www.NvWEA.org.*

April 7—Winnemucca—RCAC Utility Safety. Info: Stevan Palmer, 775/323-8882.

April 19—Las Vegas—RCAC Evaluating Your Community's Wastewater Options. Info: Stevan Palmer, 775/323-8882.

May 1-7 National Drinking Water Week

May 3-4—Las Vegas—RCAC Water Fair, May 3: Arsenic Treatment Technologies; Complying with the Arsenic Rule; May 4: Funding Options. Info: Stevan Palmer, 775/323-8882.

May 17—Carson City—RCAC Water Distribution and Treatment Operator Certification Test Preparation Grades III and IV. Info: Stevan Palmer, 775/323-8882.

May 18-19—Carson City—RCAC Water Distribution and Treatment Operator Certification Test Preparation Grades I and II. Info: Stevan Palmer, 775/323-8882.

June 1—Reno—RCAC Utility Safety. Info: Stevan Palmer, 775/323-8882.

June 3—Wastewater Certification Exam Test Preparation Videoconference (tentative date) . Info: Stevan Palmer, 775/323-8882.

July 20—Tonopah—Budget Development and Rate Setting. Info: Stevan Palmer, 775/323-8882.

August 17-18—Ely—Water Distribution Operator Certification Test Preparation Grades I and II. Info: Stevan Palmer, 775/323-8882.

September 1—Reno—Funding Options. Info: Stevan Palmer, 775/323-8882.

September 29—Reno—Arsenic Treatment Technologies. Info: Stevan Palmer, 775/323-8882.

*** Nevada Rural Water Association—Please pre-register for these FREE classes, so that instructors can supply class materials for all participants. Call 775/783-7225 or fax 775/783-7228.*

This symbol designates Nevada State Health Division pre-approved training for continuing education units (CEU) credit. Other training may be eligible for CEUs but is not yet pre-approved. Before attending any training, contact the Health Division at 775/687-6615 ext. 235 for approval. Ten hours of approved training equals 1 CEU. A different ratio applies for safety training. Contact Steve Brockway at 775/687-6615 ext.235 for details.

University of Nevada, Reno
Colleges of Agriculture, Biotechnology and Natural Resources & Cooperative Extension
2005 Videoconference Training Calendar
UNR videoconference classes for water system operators and managers are available in most communities. To request a workshop in your area, call Crystel Montecinos at 775/784-6853 or e-mail: xtelle@cabnr.unr.edu.

Community College of Southern Nevada
Wastewater & Water Technology Program
Info: LeAnna Risso, 702/434-6600 ext. 6418.

WWET Training in Clark County
Info: Jeff Butler 702/258-3296; see *www.wwet.org* for a current training calendar.

State of Nevada Water Certification Exams
All exams will be proctored during the week of the date listed. Applications are due to the state (Steve Brockway) 30 days before exam dates. A proctor will contact examinees to schedule testing. 2005 exam dates are March 23, March 25 (at NvRWA conference), June 15, Sept. 14 and Dec. 14. Info: Debra Kaye, 775/834-8114.

Wastewater Certification Board Testing
Wastewater certification exams are given in March, June, Sept., Dec.; Info: 775/465-2045

Answers to Spigot
1.D; 2.A; 3.D; 4.A; 5.D

Nevada Drinking Water and Wastewater Training Coalition

American Water Works Association California/Nevada Section
www.ca-nv-awwa.org
Philip Walsack, Smaller Utilities Committee Chair, 775/841-3131
Nicole Schreuder, Education Mgr., 909/291-2101

Indian Health Service
Dominic Wolf, 775/784-5327

Nevada Division of Environmental Protection
www.ndep.nv.gov/index.htm
Adele Basham, DWSRF, 775/687-9488
Bill Coughlin, AB 198 Water Grant Program, 775/687-9422
Nevan Kane, Wellhead Protection, 775/687-9426

Nevada Rural Water Association
www.nvrwa.org
888/884-2055
Bob Foerster, Director
John Allred
Jon Anderson
Curtis Duff
David Miller
John Scovil
Elizabeth Stubbs
Teresa Taylor
David Willard

Nevada State Health Division
www.state.nv.us/health/bhps
775/687-6615
Jim Balderson, SWAP, ext. 228
Steve Brockway, CEU approval, ext. 235
Dana Pennington, ext. 237

Nevada Water Environment Association
www.wef.org
Starlin Jones, 775/861-4104
Eric Leveque, 702/792-3711

Public Utilities Commission of Nevada
www.state.nv.us/puc
Steve McGoff, Utility Engineer, 775/687-6040

Rural Community Assistance Corporation
www.rcac.org
775/323-8882
John Dailey, Regional Manager
Karen McBride
Stevan Palmer
Lisa Thayer
Abby Johnson, consultant, 775/885-0612

U.S. Environmental Protection Agency, Region 9
www.epa.gov/region09
Marvin Young, 415/972-3561

USDA-Rural Development
www.usda.gov/rus/water/index.htm
Mike Holm, 775/887-1222, ext. 26
Kay Vernatter, 702/262-9047 ext. 113

University of Nevada, Reno Dept. of Civil Engineering
Dean Adams, 775/784-1474

UNR Environmental & Resource Sciences and Nevada Cooperative Extension
www.unce.unr.edu/swp
Crystel Montecinos, 775/784-6853
Mark Walker, 775/784-1938

Water/Wastewater Education and Training Consortium of Southern Nevada — WWET
www.wwet.org
Jeff Butler, 702/258-3296

Rural Community Assistance Corporation
3120 Freeboard Drive, Suite 201
West Sacramento, CA 95691

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Nevada Drinking Water and Wastewater Training Coalition

Water Lines

Winter 2004 - 05